

Fig. 1: Verification of differential expression of HIF3alpha splice variant 1 by quantitative RT-PCR

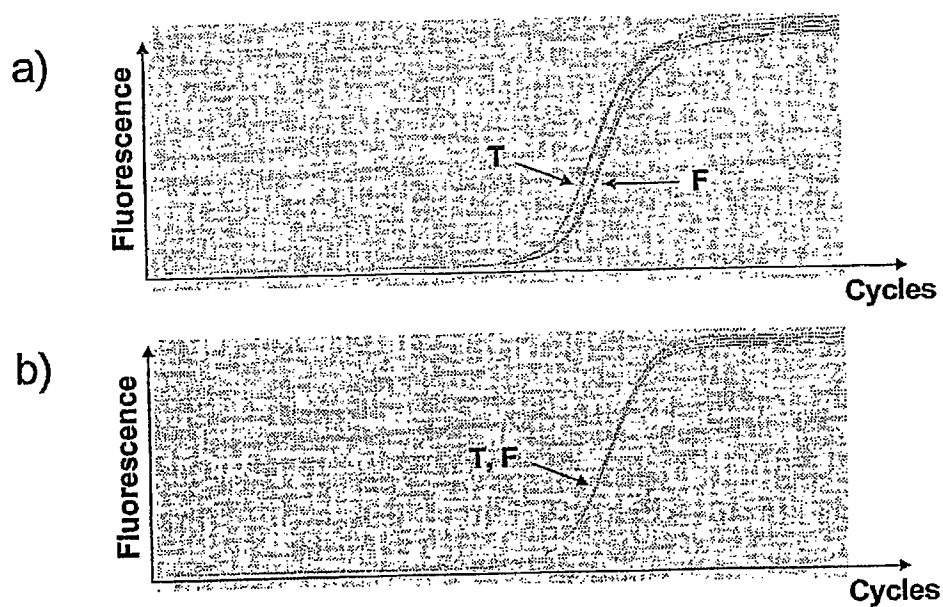


Fig. 2: Verification of differential expression of HIF3alpha splice variant 1 by quantitative RT-PCR

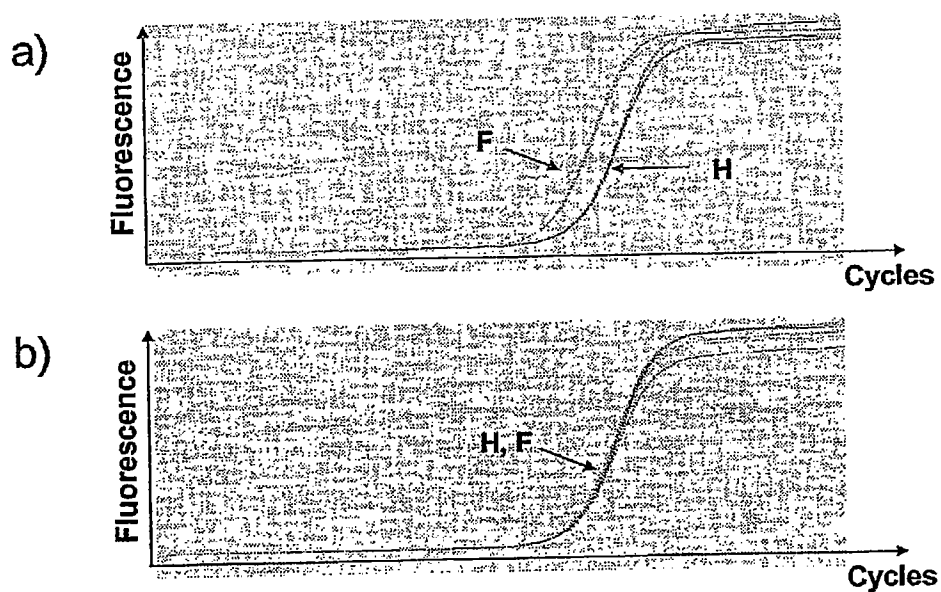


Fig. 3: Verification of differential expression of HIF3alpha splice variant 2 by quantitative RT-PCR

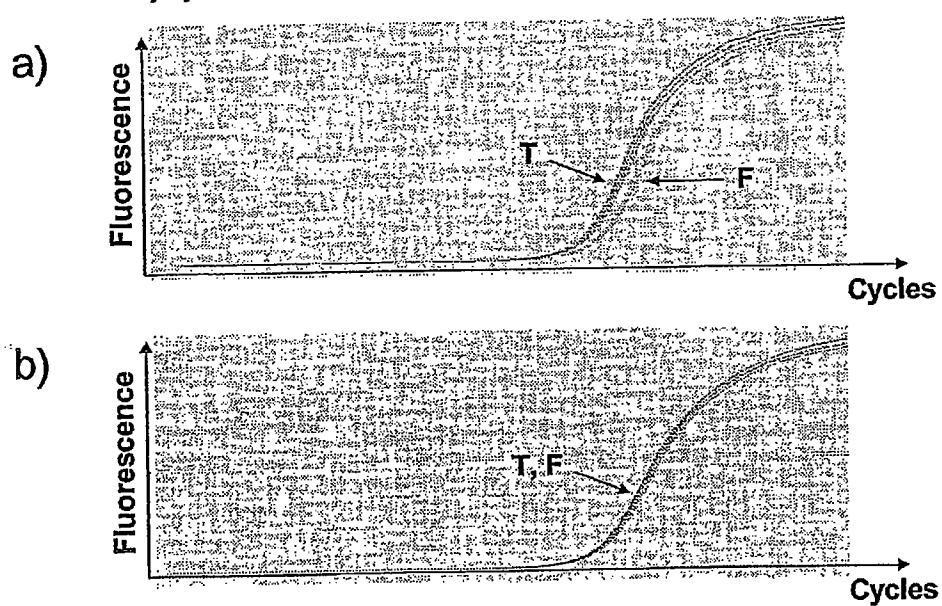


Fig. 4: Verification of differential expression of HIF3alpha splice variant 3 by quantitative RT-PCR

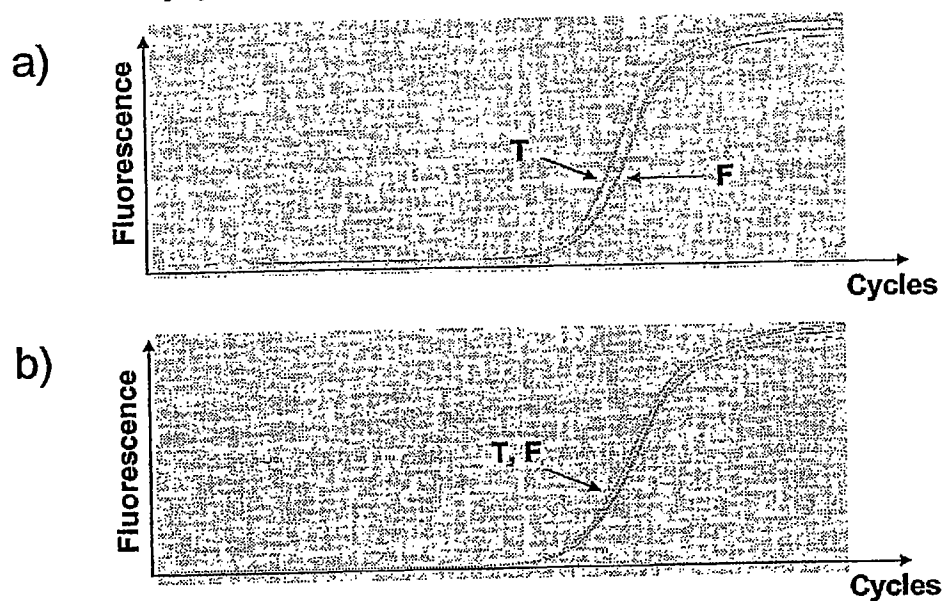


Fig. 5: Verification of differential expression of HIF3alpha splice variant 5 by quantitative RT-PCR

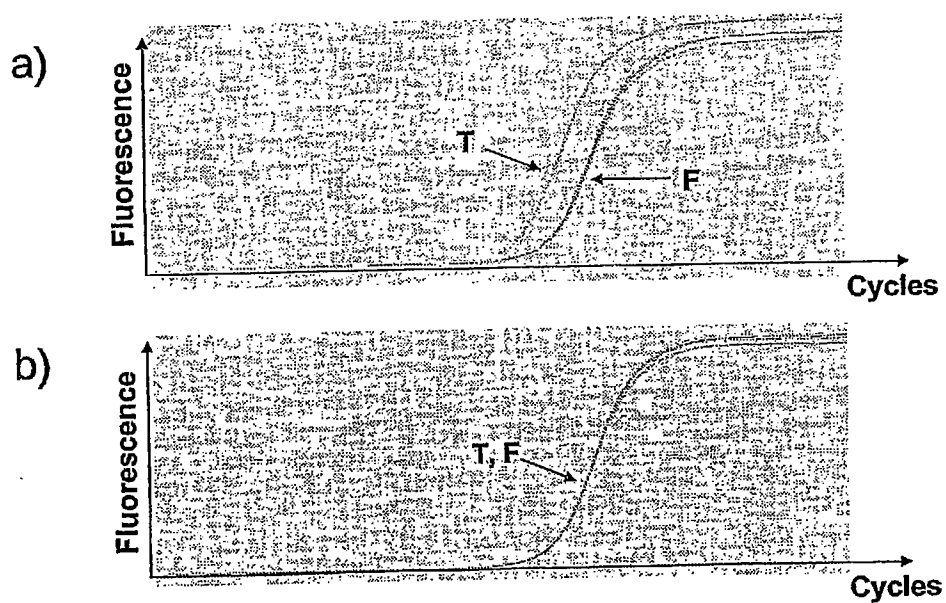


Fig. 6: SEQ ID NO. 1**Length: 289 bp**

```
1  CATTATGAG AGTTTATTCA TTCAAACAT ATTTACTGTC GGGCGTGGTG
51  GTTCATACCA GTAATCCCAG CACTTTGGGA GGCCAAGGCA GGTGGATCGC
101 TTGAACTCAG GAGTTCAAGA CCAGCCTGGG CAACATGGTG GAACTTCGTC
151 TCTACAAAAC ATATAAACAT CAGCCAGGCA TGATGGCACA TAGCTGCAGT
201 CCCAGCTACT TGTGGGAGCT GAAGTAGGAG GATCACTTGA GCCCAGGAGG
251 TCGAGGCTGT GGTGAGCTGT GTTGTGCCA CTGCACTCC
```

Fig. 7: **Alignment of SEQ ID NO. 1**
 with human HIF3alpha splice variant sv1 cDNA,
 SEQ ID NO. 6

```
289 GGAGTGCAGTGGCACAACACAGCTCACCACAGCCTCGACCTCCTGGGCT 240
    ||||||||||||||||||||||||||||||||||||||||||||||||
1421 GGAGTGCAGTGGCACAACACAGCTCACCGCAGCCTCGACCTCCTGGGCT 1470

239 CAAGTGATCCTCCTACTTCAGCTCCCACAAGTAGCTGGGACTGCAGCTAT 190
    ||||||||||||||||||||||||||||||||||||||||||||||||
1471 CAAGTGATCCTCCTACTTCAGCTCCCACAAGTAGCTGGGACTGCAGCTAT 1520

189 GTGCCATCATGCCTGGCTGATGTTTATATGTTTTGTAGAGACGAAGTTCC 140
    ||||||||||||||||||||||||||||||||||||||||||||||||
1521 GTGCCATCATGCCTGGCTGATGTTTATATGTTTTGTAGAGACGAGGTTTC 1570

139 ACCATGTTGCCCAGGCTGGTCTTGAACCTCCTGAGTTCAAGCGATCCACCT 90
    ||||||||||||||||||||||||||||||||||||||||||||||||
1571 ACCATGTTGCCCAGGCTGGTCTTGAACCTCCTGAGTTCAAGCGATCCACCT 1620

89 GCCTTGGCCTCCCAAAGTGCTGGGATTACTGGTATGAACCACCACGCCCCG 40
    ||||||||||||||||||||||||||||||||||||||||||||||||
1621 GCCTTGGCCTCCCAAAGTGCTGGGATTACTGGTATGAACCACCACGCCCCG 1670

39 ACAGTAAATATGTTTTGAATGAATAAACTCTCATAAATG 1
    ||||||||||||||||||||||||||||||||||||||||||||||||
1671 ACAGTAAATATGTTTTGAATGAATAAACTCTCATAAATG 1709
```

**Figure 8: SEQ ID NO. 2:
amino acid sequence of
human HIF3alpha,
splice variant 1**

Length: 450 aa

```
1 MRPAAGAARR PRCCTSWLTR CPSPAASAPT WTRPLSCASP SATCACTASA
51 PQLELIGHSI FDFIHPCDQE ELQDALTPQQ TLSRRKVEAP TERCFSLRMK
101 STLTSRGRTL NLKAATWKVL NCSGHMRAYK PPAQTSPAGS PDSEPPLQCL
151 VLICEAIPHP GSLEPPLGRG AFLSRHSLDM KFTYCDDRIA EVAGYSPDDL
201 IGCSAYEYIH ALDSDAVSKS IHTLLSKGQA VTGQYRFLAR SGGYLWTQTQ
251 ATVVSGGRGP QSESIVCVHF LISQVEETGV VLSLEQTEQH SRRPIQRGAP
301 SQKDTPNPGD SLDTPGPRIL AFLHPPSLSE AALAADPRRF CSPDLRRLLG
351 PILDGASVAA TPSTPLATRH PQSPLSADLP DELPVGTEHV HRLFTSGKDT
401 EAVETDL DIA QDPSTPLLNL NEPLGFHFVT QSGVQWHKHS SPQPRPPGLK
```


Fig. 9: SEQ ID NO. 3:
amino acid sequence of
human HIF3alpha,
splice variant 2

Length: 342 aa

```
1  MALGLQRARS  TTELKKEKSR  DAARSRRSQE  TEVLYQLAHT  LPFARGVSAH
51  LDKASIMRLT  ISYLRMHRLC  AAGEWNQVGA  GGEPLDACYL  KALEGFVMVL
101 TAEGDMAYLS  ENVSKHLGLS  QLELIGHSIF  DFIHPCDQEE  LQDALTPQQT
151 LSRRKVEAPT  ERCFSLRMKS  TLTSRGRTLN  LKAATWKVLN  CSGHMRAYKP
201 PAQTSPAGSP  DSEPPLQCLV  LICEAIPHPG  SLEPPLGRGA  FLSRHSLDMK
251 FTYCDDRIAE  VAGYSPDDLI  GCSAYEYIHA  LDSDAVSKSI  HTLLSKGQAV
301 TGQYRFLARS  GGYLWTQTQA  TVVSGGRGPQ  SESIVCVHFL  IR
```

Fig. 10: SEQ ID NO. 4:
amino acid sequence of
human HIF3alpha,
splice variant 3

Length: 632 aa

```
1 MALGLQRARS TTELKREKSR DAARSRRSQE TEVLYQLAHT LPFARGVSAH
51 LDKASIMRLT ISYLRMHRLC AAGEWNQVGA GGEPLDACYL KALEGFVMVL
101 TAEGDMAYLS ENVSKHLGLS QLELIGHSIF DFIHPCDQEE LQDALTPQQT
151 LSRRKVEAPT ERCFSLRMKS TLTSRGRTLN LKAATWKVLN CSGHMRAYKP
201 PAQTSPAGSP DSEPPLQCLV LICEAIPHPG SLEPPLGRGA FLSRHS LDMK
251 FTYCDDRIAE VAGYSPDDLI GCSAYEYIHA LDSDAVSKSI HTLLSKGQAV
301 TGQYRFLARS GGYLWTQTQA TVVSGGRGPQ SESIVCVHFL ISQVEETGVV
351 LSLEQTEQHS RRPIQRGAPS QKDTNPNGDS LDTPGPRILA FLHPPSLSEA
401 ALAADPRRFC SPDLRRLGFP ILDGASVAAT PSTPLATRHP QSPLSADLPD
451 ELPVGTENVH RLFTSGKDTE AVETDL DIAQ DADALDLEML APYISMDDDF
501 QLNASEQLPR AYHRPLGAVP RPRARSFHGL SPPALEPSLL PRWGSDPRLS
551 CSSPSRGDPS ASSPMAGARK RTLAQSSSEDE DEGVELLGVR PPKRSPSPEH
601 ENFLLFPLSL VCWGINGILW PSLPSWLKPT VL
```

Fig. 11: SEQ ID NO. 5:
amino acid sequence of
human HIF3alpha,
splice variant 5

Length: 648 aa

```
1  MRLTISYLRM  HRLCAAGEWN  QVGAGGEPLD  ACYLKALEGF  VMVLTAEGDM
51  AYLSENVSKH  LGLSQLELIG  HSIFDFIHPC  DQEELQDALT  PQOTLSRRKV
101  EAPTERCFSL  RMKSTLTSRG  RTLNLKAATW  KVLNCSGHRM  AYKPPAQTSP
151  AGSPDSEPPL  QCLVLICEAI  PHPGSLEPPL  GRGAFLSRHS  LDMKFTYCDD
201  RIAEVAGYSP  DDLIGCSAYE  YIHALDSDAV  SKSIHTLLSK  GQAVTGQYRF
251  LARSGGYLWT  QTQATVVSGG  RGPQSESTVC  VHFLISQVEE  TGVVLSLEQT
301  EQHSRRPIQR  GAPSQKDTFN  PGDSLDTPGP  RILAFLLHPPS  LSEAALAADP
351  RRFCSPDLRR  LLGPILDGAS  VAATPSTPLA  TRHPQSPLSA  DLPDELPVGT
401  ENVHRLFTSG  KDTEAVETDL  DIAQDADALD  LEMLAPYISM  DDDFQLNASE
451  QLPRAYHRPL  GAVPRPRARS  FHGLSPPALE  PSLLPWGSND  PRLSCSSPSR
501  GDPSASSPMA  GARKRTLAQS  SEDEDEGVLE  LGVRPFKRSP  SPEHENFLLF
551  PLSLSFLLTG  GPAPGSLQDP  TELTQFLLSV  LSFPIIDPYP  LGCAAPGLHA
601  SPFSLPTISV  PQNPLHFPPQ  PSRHALTLTL  PHMFGAPGAP  SPLGWFAI
```

Fig. 12: SEQ ID NO. 6:
nucleotide sequence of human HIF3alpha cDNA,
splice variant 1

Length: 1709 bp

```
1  ACTCGTAACT CGCACCCGGG TCCTGGCTGC ACCGCATCCC CTCCTGCACC
51  CCCTGGATGG CCCTTCAGCC AACGGGGGGCC TGGGCGATGG TCGACCACGG
101 AGCTGCGCAA GGAAAAGTCC CGGGATGCGG CCCGCAGCCG GCGCAGCCAG
151 GAGACCGAGG TGCTGTACCA GCTGGCTCAC ACGCTGCCCT TCGCCCCGCG
201 CGTCAGCGCC CACCTGGACA AGGCCTCTAT CATGCGCCTC ACCATCAGCT
251 ACCTGCGCAT GCACCGCCTC TCGCCGCGAG CTGGAGCTCA TTGGACACAG
301 CATCTTTGAT TTCATCCACC CCTGTGACCA AGAGGAGCTT CAGGACGCCC
351 TGACCCCCCA GCAGACCCTG TCCAGGAGGA AGGTGGAGGC CCCCACGGAG
401 CGGTGCTTCT CCTTGCGCAT GAAGAGTACA CTCACCAGCC GCGGGCGCAC
451 CCTCAACCTC AAGGCGGCCA CCTGGAAGGT GCTGAACTGC TCTGGACATA
501 TGAGGGCCTA CAAGCCACCT GCGCAGACTT CTCCAGCTGG GAGCCCTGAC
551 TCAGAGCCCC CGCTGCAGTG CCTGGTGCTC ATCTGCGAAG CCATCCCCCA
601 CCCAGGCAGC CTGGAGCCCC CACTGGGCCG AGGGGCCTTC CTCAGCCGCC
651 ACAGCCTGGA CATGAAGTTC ACCTACTGTG ACGACAGGAT TGCAGAAGTG
701 GCTGGCTATA GTCCCCGATGA CCTGATCGGC TGTTCGCTCCT ACGAGTACAT
751 CCACGCGCTG GACTCCGATG CGGTCAGCAA GAGCATCCAC ACCTTGCTGA
801 GCAAGGGCCA GGCAGTAACA GGGCAGTATC GCTTCCTGGC CCGGAGTGGT
851 GGCCTACCTGT GGACCCAGAC CCAGGCCACA GTGGTGTCAG GGGGACGGGG
901 CCCCCAGTCG GAGAGTATCG TCTGTGTCCA TTTTTPAATC AGCCAGGTGG
951 AAGAGACCGG AGTGGTGCTG TCCCTGGAGC AAACGGAGCA ACACTCTCGC
1001 AGACCCATTC AGCGGGGCGC CCCCTCTCAG AAGGACACCC CTAACCTTGG
1051 GGACAGCCTT GACACCCCTG GCCCCCGEAT CCTTGCCTTC CTGCACCCGC
1101 CTTCCCTGAG CGAGGCTGCC CTGGCCGCTG ACCCCGCGG TTTCTGCAGC
1151 CCTGACCTCC GTCGCCTCCT GGGACCCATC CTGGATGGGG CTTCAGTAGC
1201 AGCCACTCCC AGCACCCCGC TGGCCACACG GCACCCCAA AGTCCTCTTT
1251 CGGCTGATCT CCCAGATGAA CTACCTGTGG GCACCGAGAA TGTGCACAGA
1301 CTCTTCACCT CCGGGAAAGA CACTGAGGCA GTGGAGACAG ATTTAGATAT
1351 AGCTCAGGAC CCCAGCACCC CACTCCTGAA CCTGAATGAG CCCCTGGGTT
1401 TTCACCTTGT CACCCAGTCT GGAGTGCAGT GGCACAAACA CAGCTCACCG
1451 CAGCCTCGAC CTCCTGGGCT CAAGTGATCC TCCTACTTCA GCTCCACAA
1501 GTAGCTGGGA CTGCAGCTAT GTGCCATCAT GCCTGGCTGA TGTTTATATG
1551 TTTTGTAGAG ACGAGGTTTC ACCATGTTGC CCAGGCTGGT CTTGAATCC
1601 TGAGTTCAAG CGATCCACCT GCCTTGGCCT CCCAAAGTGC TGGGATTACT
1651 GGTATGAACC ACCACGCCCG ACAGTAAATA TGTTTGAAT GAATAAACTC
1701 TCATAAATG
```

Fig. 13: SEQ ID NO. 7:
nucleotide sequence of
human HIF3alpha cDNA,
splice variant 2

Length: 2239 bp

```
1  TGGGAGCGGC  GACTGGCGAG  CCATGGCGCT  GGGGCTGCAG  CGCGCAAGGT
51  CGACCACGGA  GCTGCGCAAG  GAAAAGTCCC  GGGATGCGGC  CCGCAGCCGG
101 CGCAGCCAGG  AGACCGAGGT  GCTGTACCAG  CTGGCTCACA  CGCTGCCCTT
151 CGCCCGCGGC  GTCAGCGCCC  ACCTGGACAA  GGCCTCTATC  ATGCGCCTCA
201 CCATCAGCTA  CCTGCGCATG  CACCGCCTCT  GCGCCGCAGG  GGAGTGGAAC
251 CAGGTGGGAG  CAGGGGGAGA  ACCACTGGAT  GCCTGCTACC  TGAAGGCCCT
301 GGAGGGCTTC  GTCATGGTGC  TCACCGCCGA  GGGAGACATG  GCTTACCTGT
351 CGGAGAATGT  CAGCAAACAC  CTGGGCCTCA  GTCAGCTGGA  GCTCATTGGA
401 CACAGCATCT  TTGATTTCAT  CCACCCCTGT  GACCAAGAGG  AGCTTCAGGA
451 CGCCCTGACC  CCCCAGCAGA  CCCTGTCCAG  GAGGAAGGTG  GAGGCCCCCA
501 CGGAGCGGTG  CTTCTCCTTG  CGCATGAAGA  GTACGCTCAC  CAGCCGCGGG
551 CGCACCCCTA  ACCTCAAGGC  GGCCACCTGG  AAGGTGCTGA  ACTGCTCTGG
601 ACATATGAGG  GCCTACAAGC  CACCTGCGCA  GACTTCTCCA  GCTGGGAGCC
651 CTGACTCAGA  GCCCCGCTG  CAGTGCCTGG  TGCTCATCTG  CGAAGCCATC
701 CCCCACCCAG  GCAGCCTGGA  GCCCCACTG  GGCCGAGGGG  CCTTCCTCAG
751 CCGCCACAGC  CTGGACATGA  AGTTCACCTA  CTGTGACGAC  AGGATTGCAG
801 AAGTGGCTGG  CTATAGTCCC  GATGACCTGA  TCGGCTGTTC  CGCCTACGAG
851 TACATCCACG  CGCTGGACTC  CGACGCGGTC  AGCAAGASCA  TCCACACCTT
901 GCTGAGCAAG  GGCCAGGCAG  TAACAGGGCA  GTATCGCTTC  CTGGCCCCGA
951 GTGGTGGCTA  CCTGTGGACC  CAGACCCAGG  CCACAGTGGT  GTCAGGGGGA
1001 CGGGGCCCCC  AGTCGGAGAG  TATCGTCTGT  GTCCATTTT  TAATCAGGTA
1051 AGCAGGAGGA  GGGGCTGGGG  TGGCTGTGTG  TGGGCTGAT  CTGCATGTGT
1101 GGACAGGTGT  GTGTGTGTGT  GTGTGTGTGT  GTGTGTGTGT  GCGTATGAGC
1151 ATGCATGTGT  ATCATGCATA  AGTGTATGTG  AGGGAGTGTG  CACGTGTACA
1201 CATATGAGGA  ATGTGTGTCA  CCATGTAAAT  GCCGCTGTGT  GTGTCTGCAT
1251 GGACACAGGT  ATGTGTATGG  GTGTGTAGAC  TGTTAATTTT  TTTTTTTTTT
1301 TTTTTTTGCG  TGAACCTCTG  CTTAAGTGGG  TTGTTAATTC  AAATTAGAAA
1351 GGGGTCTTTA  TTTGGCCTGG  CATGGTGGCT  CATGCCGTGA  ATCCTAGCAC
1401 TTTGGGAGGC  TGAGGTGGGC  GGATTGCCCT  AGCTCAGGAG  TTCGAAACCA
1451 GCCTGGGCAA  CATGACGAAA  TGCTGTTTCT  GCTAATAATA  CCAAAAATTA
1501 GCCGGGTGTG  GTGACACATG  CCTGTGATCC  CAACTACTCG  GGAGGCTGAG
1551 GCACGAGAAT  CATTAGAACC  CGGGTGGTGG  AGGCTGCAGT  GAGCCGAGAT
1601 TGCCTCAGTG  CACTCTGGCC  TCGGCAACAG  AGCCGAGACT  TGTCTCAAAC
1651 AAACAAACAA  ACAACAAAAA  GGAATCTATA  TTCAAGTTAA  AATAAGAAGT
1701 GTAACAGAAT  CATGGGGTCT  TTTTGTCTTT  TTAAATTTTG  ATGTGGCTCA
1751 CGCCTGTAAA  TCCCAAGGTG  TTGGGATTAC  AGGCGTGAGC  CACTGCACCC
1801 GGCCCATGTT  GTGGTTTATA  TCAGTAGTTC  CTTTGTAAAT  AGTGAACAGT
1851 ATTCCATGGT  ATGAATAGAG  CACAGTTTTT  TTTTTTATCC  ATTACCAGT
1901 TAGAAGACAT  TGGGCTGTTT  CCAAGTTTGG  GTGATTACAA  AAAACAGCTA
1951 CTGTAAACAT  TCTCATACAA  GATTTTATGA  GATCAGATGT  TTTTATTTCT
2001 CTTGGGTAAA  CAGCTAGGAT  TGGAATGGAT  GGGTTATATA  GTAAGTGTAT
2051 ATTTAATCTA  AGAAACTGCC  ATGGCTGGGC  ACAGTGGCTC  ACGCCTGTAA
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2101 TCCCAGTACT TTGGGAAGCC AAGGAAGGAG GATGACTAGA GCCTCTGAGG
2151 TGAAGACCAG CCTGGGCAAA GTGGTTAAGA CTCAACCGCA AAAAAAGAAA
2201 AACAGAAAAC CTGAAAACAA ACCAAAAAAA AAAAAAAA

Figure 14: SEQ ID NO. 8:
nucleotide sequence of
human HIF3alpha cDNA,
splice variant 3

Length: 2082 bp

```
1  GACTGGCGAG CCATGGCGCT GGGGCTGCAG CGCGCAAGGT CGACCACGGA
51  GCTGCGCAAG GAAAAGTCCC GGGATGCGGC CCGCAGCCGG CGCAGCCAGG
101 AGACCGAGGT GCTGTACCAG CTGGCTCACA CGCTGCCCTT CGCCCGCGGC
151 GTCAGCGCCC ACCTGGACAA GGCCCTCTATC ATGCGCCTCA CCATCAGCTA
201 CCTGCGCATG CACCGCCTCT GCGCCGCAGG GGAGTGGAAAC CAGGTGGGAG
251 CAGGGGGAGA ACCACTGGAT GCCTGCTACC TGAAGGCCCTT GGAGGGCTTC
301 GTCATGGTGC TCACCGCCGA GGGAGACATG GCTTACCTGT CGGAGAATGT
351 CAGCAAACAC CTGGGCCTCA GTCAGCTGGA GCTCATTTGA CACAGCATCT
401 TTGATTTCAT CCACCCCTGT GACCAAGAGG AGCTTCAGGA CGCCCTGACC
451 CCCCAGCAGA CCCTGTCCAG GAGGAAGGTG GAGGCCCCCA CGGAGCGGTG
501 CTTCTCCTTG CGCATGAAGA GTACGCTCAC CAGCCGCGGG CGCACCCCTCA
551 ACCTCAAGGC GGCCACCTGG AAGGTGCTGA ACTGCTCTGG ACATATGAGG
601 GCCTACAAGC CACCTGCGCA GACTTCTCCA GCTGGGAGCC CTGACTCAGA
651 GCCCCCGCTG CAGTGCCTGG TGCTCATCTG CGAAGCCATC CCCCACCCAG
701 GCAGCCTGGA GCCCCACTG GGGCGAGGGG CCTTCCTCAG CCGCCACAGC
751 CTGGACATGA AGTTCACCTA CTGTGACGAC AGGATTGCAG AAGTGGCTGG
801 CTATAGTCCC GATGACCTGA TCGGCTGTTC CGCCTACGAG TACATCCACG
851 CGCTGGACTC CGACGCGGTC AGCAAGAGCA TCCACACCTT GCTGAGCAAG
901 GGCCAGGCAG TAACAGGGCA GTATCGCTTC CTGGCCCGGA GTGGTGGCTA
951 CCTGTGGACC CAGACCCAGG CCACAGTGGT GTCAGGGGGA CGGGGCCCCC
1001 AGTCGGAGAG TATCGTCTGT GTCCATTTTT TAATCAGCCA GGTGGAAGAG
1051 ACCGGAGTGG TGCTGTCCCT GGAGCAAACG GAGCAACACT CTCGCAGACC
1101 CATTACAGCG GGCGCCCCCT CTCAGAAGGA CACCCTAAC CCTGGGGACA
1151 GCCTTGACAC CCCTGGCCCC CGGATCCTTG CCTTCCTGCA CCGCCTTCC
1201 CTGAGCGAGG CTGCCCTGGC CGCTGACCCC CGCCGTTTCT GCAGCCCTGA
1251 CCTCCGTGCG CTCTGCGGAC CCATCCTGGA TGGGGCTTCA GTAGCAGCCA
1301 CTCCCAGCAC CCCGCTGGCC ACACGGCACC CCCAAAGTCC TCTTTGGGCT
1351 GATCTCCAG ATGAACTACC TGTGGGCACC GAGAATGTGC ACAGACTCTT
1401 CACCTCCGGG AAAGACACTG AGGCAGTGGA GACAGATTTA GATATAGCTC
1451 AGGATGCTGA TGCTCTGGAT TTGGAGATGC TGGCCCCCTA CATCTCCATG
1501 GATGATGACT TCCAGCTCAA CGCCAGCGAG CAGCTACCCA GGGCCTACCA
1551 CAGACCTCTG GGGGCTGTCC CCCGGCCCCG TGCTCGGAGC TTCCATGGCC
1601 TGTCACCTCC AGCCCTTGAG CCTCCCTGC TACCCCGCTG GGGGAGTGAC
1651 CCCGGCTGA GCTGCTCCAG CCCTTCCAGA GGGGACCCCT CAGCATCCTC
1701 TCCCATGGCT GGGGCTCGGA AGAGGACCTT GGCCCAGAGC TCAGAGGAGC
1751 AGGACGAGGG AGTGGAGCTG CTGGGAGTGA GACCTCCCAA AAGGTCCCCC
1801 AGCCCAGAAC ACGAAAACCT TCTGCTCTTT CCTCTCAGCC TGGTGTGTTG
1851 GGGGATTAAT GGGATTCTCT GGCCTCATT ACCTAGCTGG CTTAAACCTA
1901 CTGTTTTATA GATAGGAAAC CAGAGAGGGG CAGGGGCTGG TTGAGGGTCA
1951 TACAGAAAGT CAGTGGGCCA GCTGAGACTA AAGCCTGATC TTCTAGTTTC
2001 ACTAATGGGT ATTAAAAACC TCTGCAGTGA ACTGAGATTG CGCCACTGCA
2051 CCCCAGCATG AGCGACAGAA TGGGACCTTG TC
```

Figure 15: SEQ ID NO. 9:
nucleotide sequence of
human HIF3alpha cDNA,
splice variant 5

Length: 2595 bp

```
1  AACTCGCACC CGGGTCCTGG CTGCACCGCA TCCCCTCCTG CACCCCCTGG
51  ATGGCCCTTC AGCCAACGGG GGCCTGGGCG ATGGTCGACC ACGGAGCTGC
101 GCAAGGAAAA GTCCCCGGAT GCGGCCCGCA GCCGGCGCAG CCAGGAGACC
151 GAGGTGCTGT ACCAGCTGGC TCACACGCTG CCCTTCGCCC GCGGCGTCAG
201 CGCCACCTG GACAAGGCCT CTATCATGCG CCTCACCATC AGCTACCTGC
251 GCATGCACCG CCTCTGCGCC GCAGGGGAGT GGAACCAGGT GGGAGCAGGG
301 GGAGAACCAC TGGATGCCCT CTACCTGAAG GCCCTGGAGG GCTTCGTCAT
351 GGTGCTCACC GCCGAGGGAG ACATGGCTTA CCTGTCGGAG AATGTCAGCA
401 AACACCTGGG CCTCAGTCAG CTGGAGCTCA TTGGACACAG CATCTTTGAT
451 TTCATCCACC CCTGTGACCA AGAGGAGCTT CAGGACGCCC TGACCCCCCA
501 GCAGACCCTG TCCAGGAGGA AGGTGGAGGC CCCACCGGAG CGGTGCTTCT
551 CCTTGCGCAT GAAGAGTACG CTCACCAGCC GCGGGCGCAC CCTCAACCTC
601 AAGGCGGCCA CCTGGAAGGT GCTGAACTGC TCTGGACATA TGAGGGCCTA
651 CAAGCCACCT GCGCAGACTT CTCCAGCTGG GAGCCCTGAC TCAGAGCCCC
701 CGTGTCAGTG CTGGTGCTC ATCTGCGAAG CCATCCCCCA CCCAGGCAGC
751 CTGGAGCCCC CACTGGGCCG AGGGGCCCTT CTCAGCCGCC ACAGCCTGGA
801 CATGAAGTTC ACCTACTGTG ACGACAGGAT TGCAGAAGTG GCTGGCTATA
851 GTCCCGATGA CTGATCGGGC TGTTCGCCTT ACGAGTACAT CCACGCGCTG
901 GACTCCGACG CGGTCAGCAA GAGCATCCAC ACCTTGCTGA GCAAGGGCCA
951 GGCAGTAACA GGGCAGTATC GCTTCCTGGC CCGGAGTGGT GGCTACCTGT
1001 GGACCCAGAC CCAGGCCACA GTGGTGTCAG GGGGACGGGG CCCCAGTCCG
1051 GAGAGTATCG TCTGTGTCCA TTTTTTAATC AGCCAGGTGG AAGAGACCGG
1101 AGTGGTGCTG TCCCTGGAGC AAACGGAGCA AACTCTCGC AGACCCATTCT
1151 AGCGGGGCGC CCCCTCTCAG AAGGACACCC CTAACCCTGG GGACAGCCTT
1201 GACACCCTTG GCCCCCGGAT CCTTGCCCTT CTCGACCCGC CTTCCCTGAG
1251 CGAGGCTGCC CTGGCCGCTG ACCCCCGCCG TTTCTGCAGC CTTGACCTCC
1301 GTCGCCCTCT GGGACCCATC CTGGATGGGG CTTCAGTAGC AGCCACTCCC
1351 AGCACCCCGC TGGCCACACG GCACCCCAA AGTCCCTCTT CGGCTGATCT
1401 CCCAGATGAA CTACCTGTGG GCACCGAGAA TGTGCACAGA CTCTTCACCT
1451 CCGGGAAAGA CACTGAGGCA GTGGAGACAG ATTTAGATAT AGCTCAGGAT
1501 GCTGATGCTC TGGATTGTGA GATGCTGGCC CCCTACATCT CCATGGATGA
1551 TGACTTCCAG CTCAACGCCA GCGAGCAGCT ACCCAGGGCC TACCACAGAC
1601 CTCTGGGGGC TGTCCCCCGG CCCCCTGCTC GGAGCTTCCA TGGCCTGTCA
1651 CCTCCAGCCC TTGAGCCCTC CCTGCTACCC CGCTGGGGGA GTGACCCCCG
1701 GCTGAGCTGC TCCAGCCCTT CCAGAGGGGA CCCCTCAGCA TCCTCTCCCA
1751 TGGCTGGGGC TCGGAAGAGG ACCCTGGCCC AGAGCTCAGA GGACGAGGAC
1801 GAGGGAGTGG AGCTGCTGGG AGTGAGACCT CCCAAAAGGT CCCCAGCCCC
1851 AGAACACGAA AACTTTCCTG TCTTTCCTCT CAGCCTGAGT TTCCTTCTGA
1901 CAGGAGGACC AGCCCCAGGG AGCCTGCAGG ACCCCACTGA ACTTACCCAA
1951 TTCCTTCTTT CAGTCTTAAG TTTTCCCATT CTAGACCCCT ACCCTCTAGG
2001 CTGTGCTGCT CCTGGACTTC ATGCCTCTCC ATTCTCATTG CCTACAATCT
2051 CTGTGCCCCA GAACCCCTC CACTtCCCAC CCCAGCCCTC CAGACATGCA
2101 CTTACCTTGA CTTTACCCCA CATGTTTGGG GCACCTGGGG CTCCCTCACC
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2151 CCTTGGGTGG TTTGCAATCT GAAGACTTCT CCAGCCACAC AGGCACATGC
2201 ACAGGCACGG TGCTGTCTGC ATATTGCCAG GTGGGGAGAG AAGCCAGGAC
2251 CCCTCAGCTG TCTGCCACCA TCTATGTGCC TCCCTTACCC CCCAGCTTTC
2301 TTTCTACAGA TGGTGCTACT CTTGGTCTCC CACAGGAAAA GGCCTCCCCC
2351 CTTCTTAGCC CCATTTACCC CGTTTGTGGA AGGCACTGCT CGCTCTGTTT
2401 TGTCAAGAGAG TGGCCTATCC AGATTGGTGC TATGGGGGGG TCTGACCCCT
2451 CCCTCCTCCC TCTGGAGGTG ATGTGGGCCC TCAATGGAGG GAATTGTGCT
2501 GGGCTAGGGA AAGGGGAGGG ACTAGACTGG CCACACTGGC TCTGAAACTC
2551 ACCAAtCTCT ATACACCATA AAGACCTCAC CTTGGTAGGC ACCAG
```

Fig. 16: SEQ ID NO. 10:
nucleotide sequence of human
HIF3alpha splice variant 1
coding sequence

Length: 1353 bp

```
1  ATGCGGCCCG CAGCCGGCGC AGCCAGGAGA CCGAGGTGCT GTACCAGCTG
51  GCTCACACGC TGCCCTTCGC CCGCGGCGTC AGCGCCCACC TGGACAAGGC
101 CTCTATCATG CGCCTCACCA TCAGCTACCT GCGCATGCAC CGCCTCTGCG
151 CCGCAGCTGG AGCTCATTGG ACACAGCATC TTTGATTTCa TCCACCCCTG
201 TGACCAAGAG GAGCTTCAGG ACGCCCTGAC CCCCAGCAG ACCCTGTCCA
251 GGAGGAAGGT GGAGGCCCCC ACGGAGCGGT GCTTCTCCTT GCGCATGAAG
301 AGTACACTCA CCAGCCGCGG GCGCACCTTC AACCTCAAGG CGGCCACCTG
351 GAAGGTGCTG AACTGCTCTG GACATATGAG GGCCTACAAG CCACCTGCGC
401 AGACTTCTCC AGCTGGGAGC CCTGACTCAG AGCCCCGCTG GCAGTGCCTG
451 GTGCTCATCT GCGAAGCCAT CCCCCACCCA GGCAGCCTGG AGCCCCCACT
501 GGGCCGAGGG GCCTTCCTCA GCCGCCACAG CCTGGACATG AAGTTCACCT
551 ACTGTGACGA CAGGATTGCA GAAGTGGCTG GCTATAGTCC CGATGACCTG
601 ATCGGCTGTT CCGCCTACGA GTACATCCAC GCGCTGGACT CCGATGCGGT
651 CAGCAAGAGC ATCCACACCT TGCTGAGCAA GGGCCAGGCA GTAACAGGGC
701 AGTATCGCTT CCTGGCCCGG AGTGGTGGCT ACCTGTGGAC CCAGACCCAG
751 GCCACAGTGG TGTTCAGGGG ACGGGGCCCC CAGTCGGAGA GTATCGTCTG
801 TGTCCATTTT TTAATCAGCC AGGTGGAAGA GACCGGAGTG GTGCTGTCCC
851 TGGAGCAAAC GGAGCAACAC TCTCGCAGAC CCATTTCAGC GGGCGCCCCC
901 TCTCAGAAGG ACACCCCTAA CCCTGGGGAC AGCCTTGACA CCCCTGGCCC
951 CCGGATCCTT GCCTTCCTGC ACCCGCCTTC CCTGAGCGAG GCTGCCCTGG
1001 CCGCTGACCC CCGCCGTTTC TGCAGCCCTG ACCTCCGTCG CCTCCTGGGA
1051 CCCATCCTGG ATGGGGCTTC AGTAGCAGCC ACTCCCAGCA CCGCGCTGGC
1101 CACACGGCAC CCCCAGGTC CTCTTTCGGC TGATCTCCCA GATGAACACT
1151 CTGTGGGCAC CGAGAATGTG CACAGACTCT TCACCTCCGG GAAAGACACT
1201 GAGGCAGTGG AGACAGATTT AGATATAGCT CAGGACCCCA GCACCCCACT
1251 CCTGAACCTG AATGAGCCCC TGGGTTTTCA CTTTGTCAAC CAGTCTGGAG
1301 TGCAGTGGCA CAAACACAGC TCACCGCAGC CTCGACCTCC TGGGCTCAAG
1351 TGA
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Fig. 17: SEQ ID NO. 11:
nucleotide sequence of human
HIF3alpha splice variant 2
coding sequence

Length: 1029 bp

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151 CTGGACAAGG CCTCTATCAT GCGCCTCACC ATCAGCTACC TGCGCATGCA
201 CCGCCTCTGC GCCGCAGGGG AGTGGAACCA GGTGGGAGCA GGGGGAGAAC
251 CACTGGATGC CTGCTACCTG AAGGCCCTGG AGGGCTTCGT CATGGTGCTC
301 ACCGCCGAGG GAGACATGGC TTACCTGTCT GAGAATGTCA GCAAACACCT
351 GGGCCTCAGT CAGCTGGAGC TCATTGGACA CAGCATCTTT GATTTTCATCC
401 ACCCCTGTGA CCAAGAGGAG CTTCAGGACG CCCTGACCCC CCAGCAGACC
451 CTGTCCAGGA GGAAGGTGGA GGCCCCCACG GAGCGGTGCT TCTCCTTGCG
501 CATGAAGAGT ACGCTACCA GCCGCGGGCG CACCCTCAAC CTCAAGGCGG
551 CCACCTGGAA GGTGCTGAAC TGCTCTGGAC ATATGAGGGC CTACAAGCCA
601 CCTGCGCAGA CTTCTCCAGC TGGGAGCCCT GACTCAGAGC CCCCCTGCA
651 GTGCCTGGTG CTCATCTGCG AAGCCATCCC CCACCCAGGC AGCCTGGAGC
701 CCCCCTGGG CCGAGGGGCC TTCCTCAGCC GCCACAGCCT GGACATGAAG
751 TTCACCTACT GTGACGACAG GATTGCAGAA GTGGCTGGCT:ATAGTCCC GA
801 TGACCTGATC GGCTGTTCCG CCTACGAGTA CATCCACGCG CTGGACTCCG
851 ACGCGGTCAG CAAGAGCATC CACACCTTGC TGAGCAAGGG CCAGGCAGTA
901 ACAGGGCAGT ATCGCTTCCT GGCCCCGAGT GGTGGCTACC TGTGGACCCA
951 GACCCAGGCC ACAGTGGTGT CAGGGGGACG GGGCCCCCAG TCGGAGAGTA
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Fig. 18: SEQ ID NO. 12:
nucleotide sequence of human
HIF3alpha splice variant 3
coding sequence

Length: 1899 bp

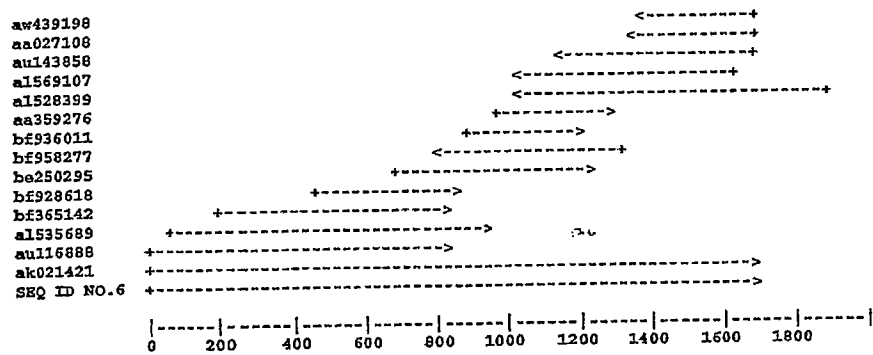
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151 CTGGACAAGG CCTCTATCAT GCGCCTCACC ATCAGCTACC TGCGCATGCA
201 CCGCCTCTGC GCCGCAGGGG AGTGGAAACCA GGTGGGAGCA GGGGGAGAAC
251 CACTGGATGC CTGCTACCTG AAGGCCCTGG AGGGCTTCGT CATGGTGTCT
301 ACCGCCGAGG GAGACATGGC TTACCTGTCT GAGAATGTCA GCAAACACCT
351 GGGCCTCAGT CAGCTGGAGC TCATTGGACA CAGCATCTTT GATTTTCATCC
401 ACCCTGTGA CCAAGAGGAG CTTCAGGACG CCCTGACCCC CCAGCAGACC
451 CTGTCCAGGA GGAAGGTGGA GGCCCCCACG GAGCGGTGCT TCTCCTTGCG
501 CATGAAGAGT ACGCTCACCA GCCGCGGGCG CACCCTCAAC CTCAAGGCGG
551 CCACCTGGAA GGTGCTGAAC TGCTCTGGAC ATATGAGGGC CTACAAGCCA
601 CCTGCGCAGA CTTCTCCAGC TGGGAGCCCT GACTCAGAGC CCCCCTGCA
651 GTGCCCTGGT CTCATCTGCG AAGCCATCCC CCACCCAGGC AGCCTGGAGC
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751 TTCACCTACT GTGACGACAG GATTGCAGAA GTGGCTGGCT ATAGTCCCGA
801 TGACCTGATC GGCTGTTCCG CCTACGAGTA CATCCACGCG CTGGACTCCG
851 ACGCGGTCAG CAAGAGCATC CACACCTTGC TGAGCAAGGG CCAGGCAGTA
901 ACAGGGCAGT ATCGCTTCCT GGCCCGGAGT GGTGGCTACC TGTGGACCCA
951 GACCCAGGCC ACAGTGGTGT CAGGGGGACG GGGCCCCCAG TCGGAGAGTA
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1051 CTGTCCCTGG AGCAAACGGA GCAACACTCT CGCAGACCCA TTCAGCGGGG
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1801 GAAAACTTTC TGCTCTTTCC TCTCAGCCTG GTGTGTTGGG GGATTAAATG
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Fig. 19: SEQ ID NO. 13:
nucleotide sequence of human
HIF3alpha splice variant 5
coding sequence

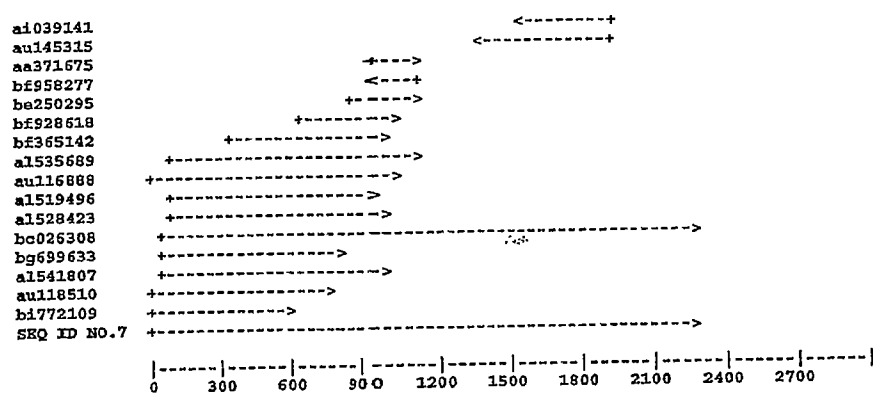
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151 GCTTACCTGT CGGAGAATGT CAGCAAACAC CTGGGCCTCA GTCAGCTGGA
201 GCTCATTGGA CACAGCATCT TTGATTTCAT CCACCCCTGT GACCAAGAGG
251 AGCTTCAGGA CGCCCTGACC CCCCAGCAGA CCCTGTCCAG GAGGAAGGTG
301 GAGGCCCCCA CGGAGCGGTG CTTCTCCTTG CGCATGAAGA GTACGCTCAC
351 CAGCCGCGGG CGCACCTCA ACCTCAAGGC GGCCACCTGG AAGGTGCTGA
401 ACTGCTCTGG ACATATGAGG GCCTACAAGC CACCTGCGCA GACTTCTCCA
451 GCTGGGAGCC CTGACTCAGA GCCCCGCTG CAGTGCCCTG TGCTCATCTG
501 CGAAGCCATC CCCACCCAG GCAGCCTGGA GCCCCACTG GGCCGAGGGG
551 CCTTCCTCAG CCGCCACAGC CTGGACATGA AGTTCACCTA CTGTGACGAC
601 AGGATTGCAG AAGTGGCTGG CTATAGTCCC GATGACCTGA TCGGCTGTTC
651 CGCCTACGAG TACATCCACG CGCTGGACTC CGACGCGGTC AGCAAGAGCA
701 TCCACACCTT GCTGAGCAAG GGCCAGGCAG TAACAGGGCA GTATCGCTTC
751 CTGGCCCCGA GTGGTGGCTA CCTGTGGACC CAGACCCAGG CCACAGTGGT
801 GTCAGGGGGA CGGGGCCCCC AGTCGGAGAG TATCGTCTGT GTCCATTTTT
851 TAATCAGCCA GGTGGAAGAG ACCCGAGTGG TGCTGTCCCT GGAGCAAACG
901 GAGCAACACT CTCGCAGACC CATTCAGCGG GGCGCCCCCT CTCAGAAGGA
951 CACCCCTAAC CCTGGGGACA GCCTTGACAC CCCTGGCCCC CGGATCCTTG
1001 CCTTCCTGCA CCCGCCTTCC CTGAGCGAGG CTGCCCTGGC CGCTGACCCC
1051 CGCGGTTTCT GCAGCCCTGA CCTCCGTCGC CTCCTGGGAC CCATCCTGGA
1101 TGGGGCTTCA GTAGCAGCCA CTCCCAGCAC CCCGCTGGCC ACACGGCACC
1151 CCCAAAGTCC TCTTTCGGCT GATCTCCAG ATGAACTACC TGTGGGCACC
1201 GAGAATGTGC ACAGACTCTT CACCTCCGGG AAAGACACTG AGGCAGTGGA
1251 GACAGATTTA GATATAGCTC AGGATGCTGA TGCTCTGGAT TTGGAGATGC
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1351 CAGCTACCCA GGGCCTACCA CAGACCTCTG GGGGCTGTCC CCCGCCCCCG
1401 TGCTCGGAGC TTCCATGGCC TGTCACCTCC AGCCCTTGAG CCCTCCCTGC
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1551 GGCCAGAGC TCAGAGGACG AGGACGAGGG AGTGGAGCTG CTGGGAGTGA
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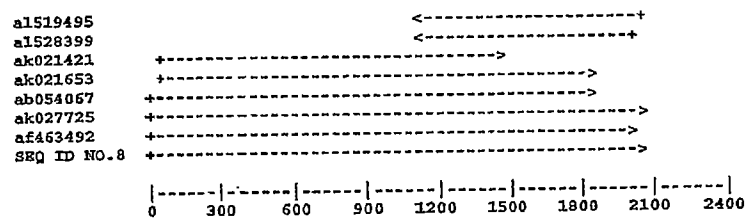
**Fig. 20: Schematic assembly of SEQ ID NO. 6,
with human ESTs and
human mRNA (AK021421)**



**Fig. 21: Schematic assembly of SEQ ID NO. 7,
with human ESTs and
human mRNA (BC026308)**



**Fig. 22: Schematic assembly of SEQ ID NO. 8,
with human ESTs and
human mRNAs (AK021421, AK021653,
AK027725, AB054067, AF463492)**



**Fig. 23: Schematic assembly of SEQ ID NO. 9,
with human ESTs and
human mRNA (AK021653)**

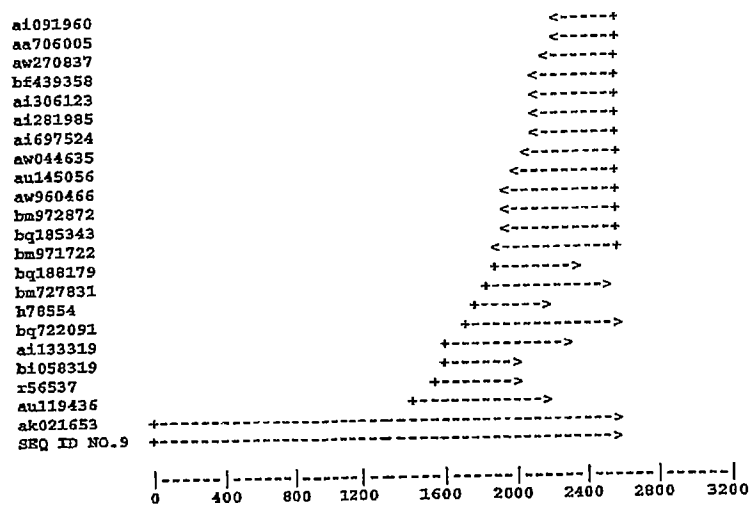


Fig. 24: Identification of differentially expressed genes by microarray hybridization

Biochip	Type of probe	Used probes (Cy5-/Cy3-labeled)	Ratio fluorescence intensity: temporal / frontal cortex
1	C	PT _{SSH(2)} / PF _{SSH(1)}	1.40
2	B	PT / PF	1.19
3	A	PT / PF	0.65
4	C	PT _{SSH(4)} / CT _{SSH(3)}	0.65
7	B	CF / PF	0.95

Fig. 26 :

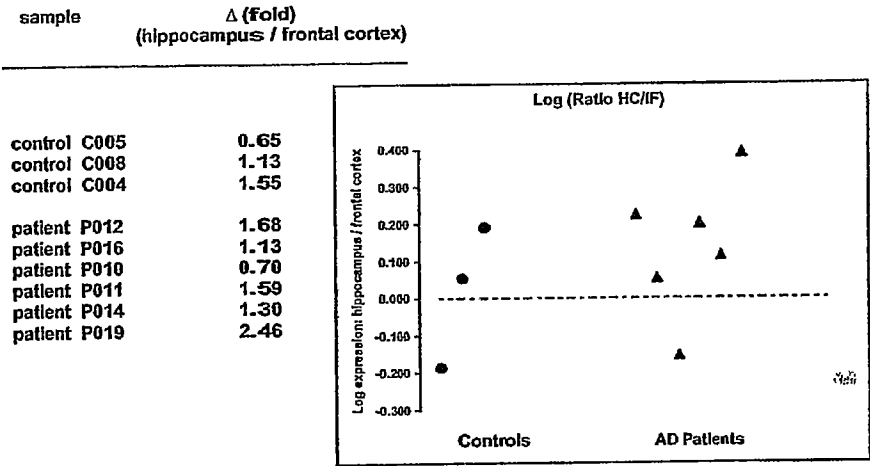


Fig. 27 :

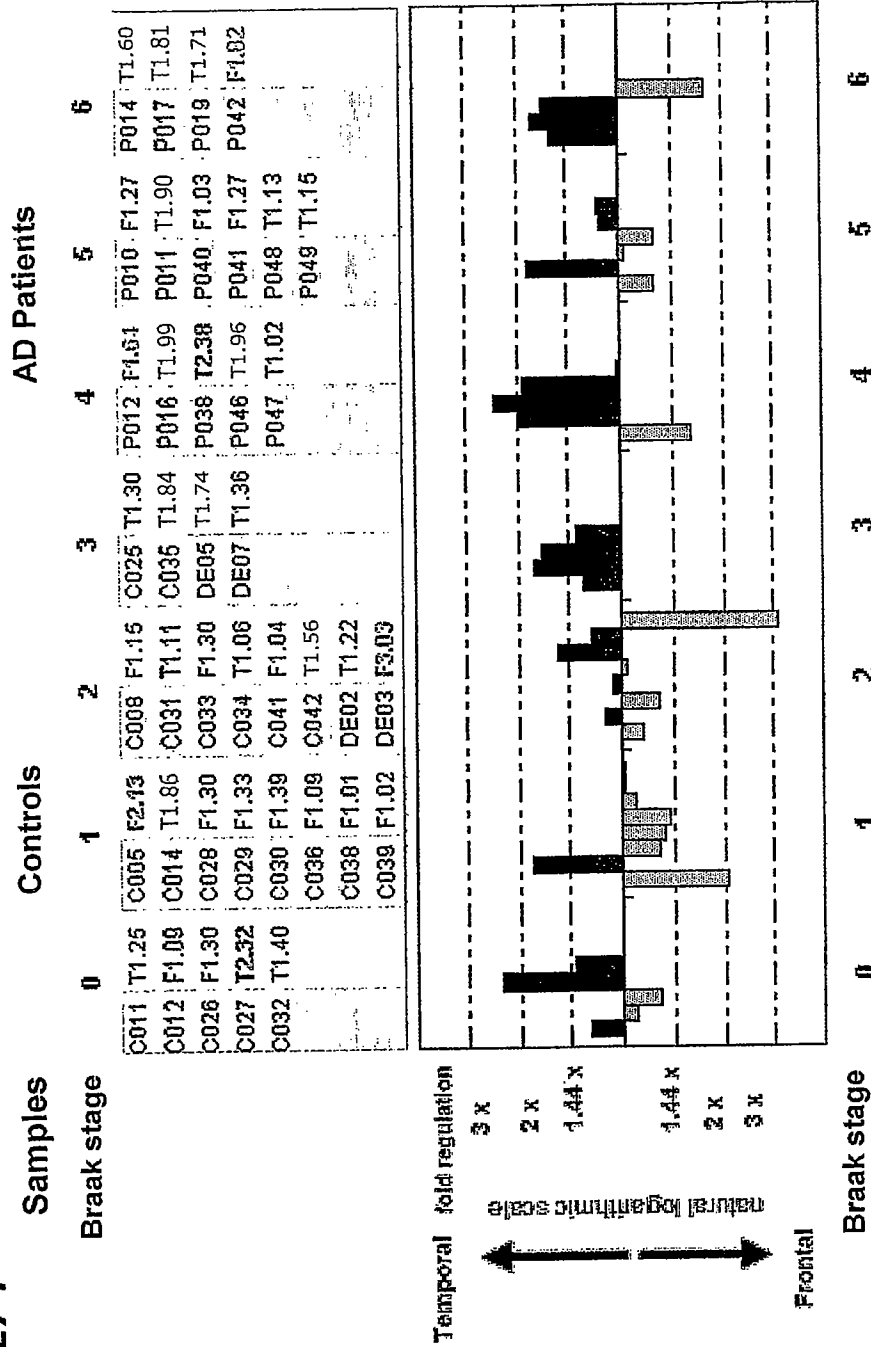


Fig. 28 :

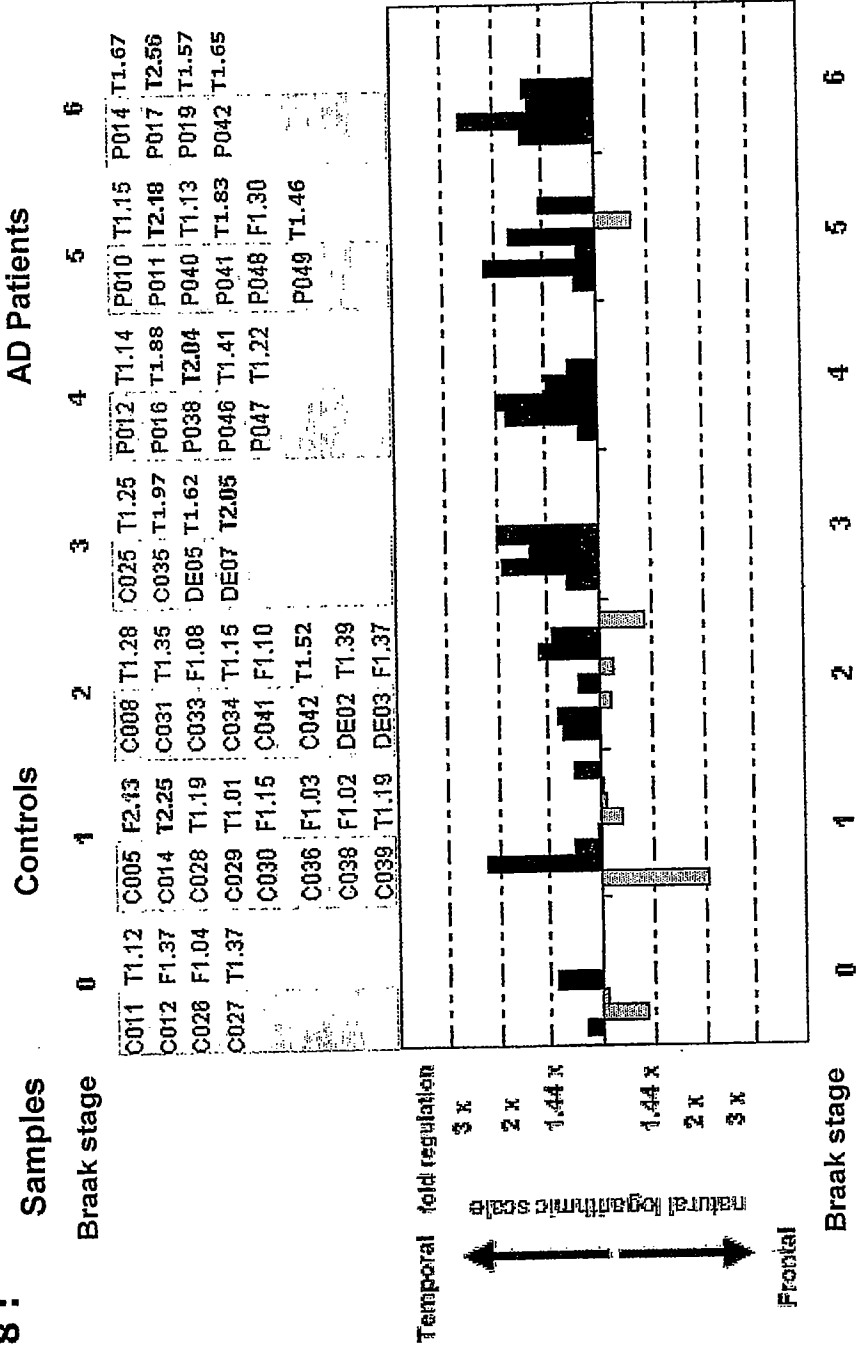


Fig. 30: Analysis of absolute mRNA expression of HIF3alpha splice variant 1

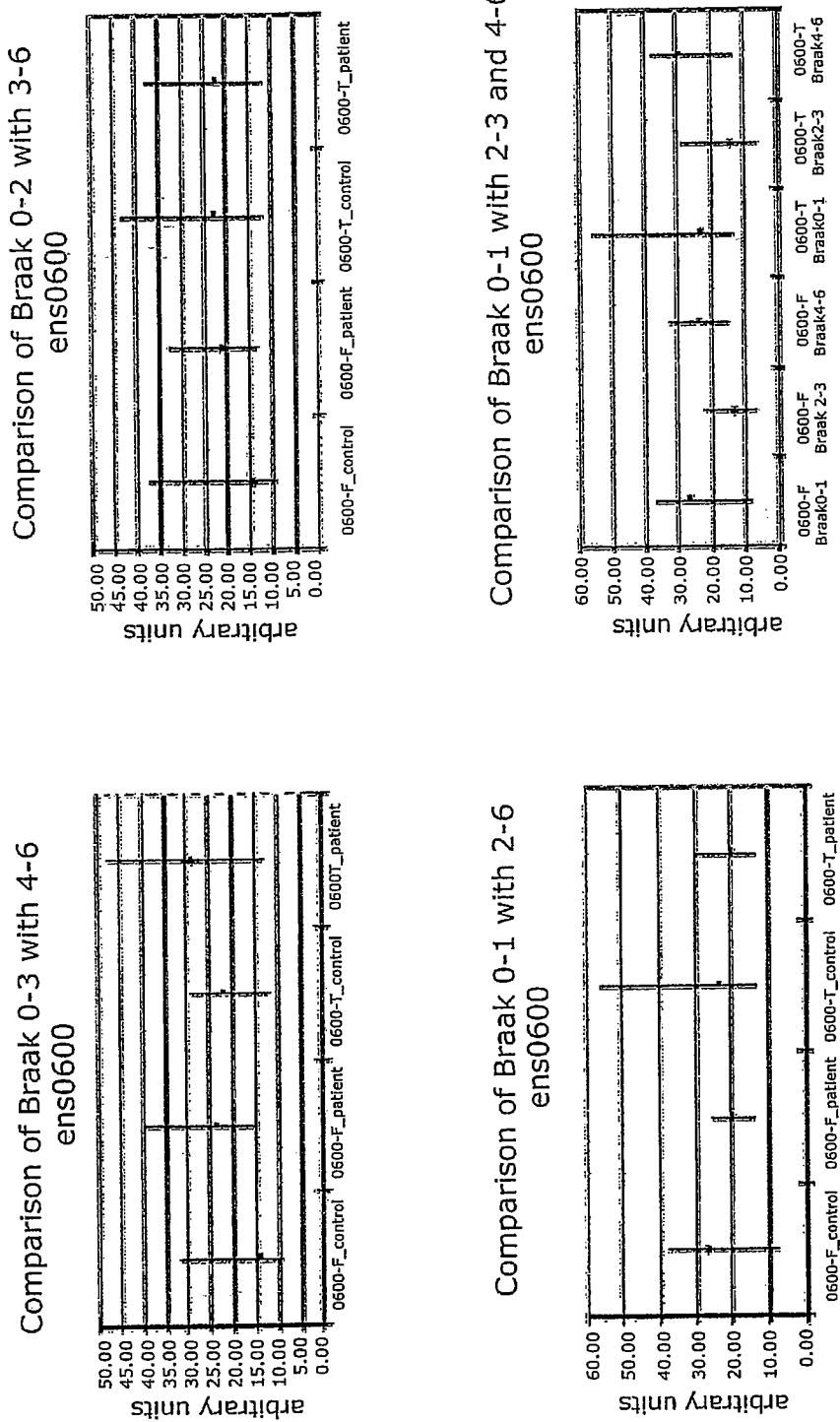


Fig. 31: Analysis of absolute mRNA expression of HIF3alpha splice variant 2

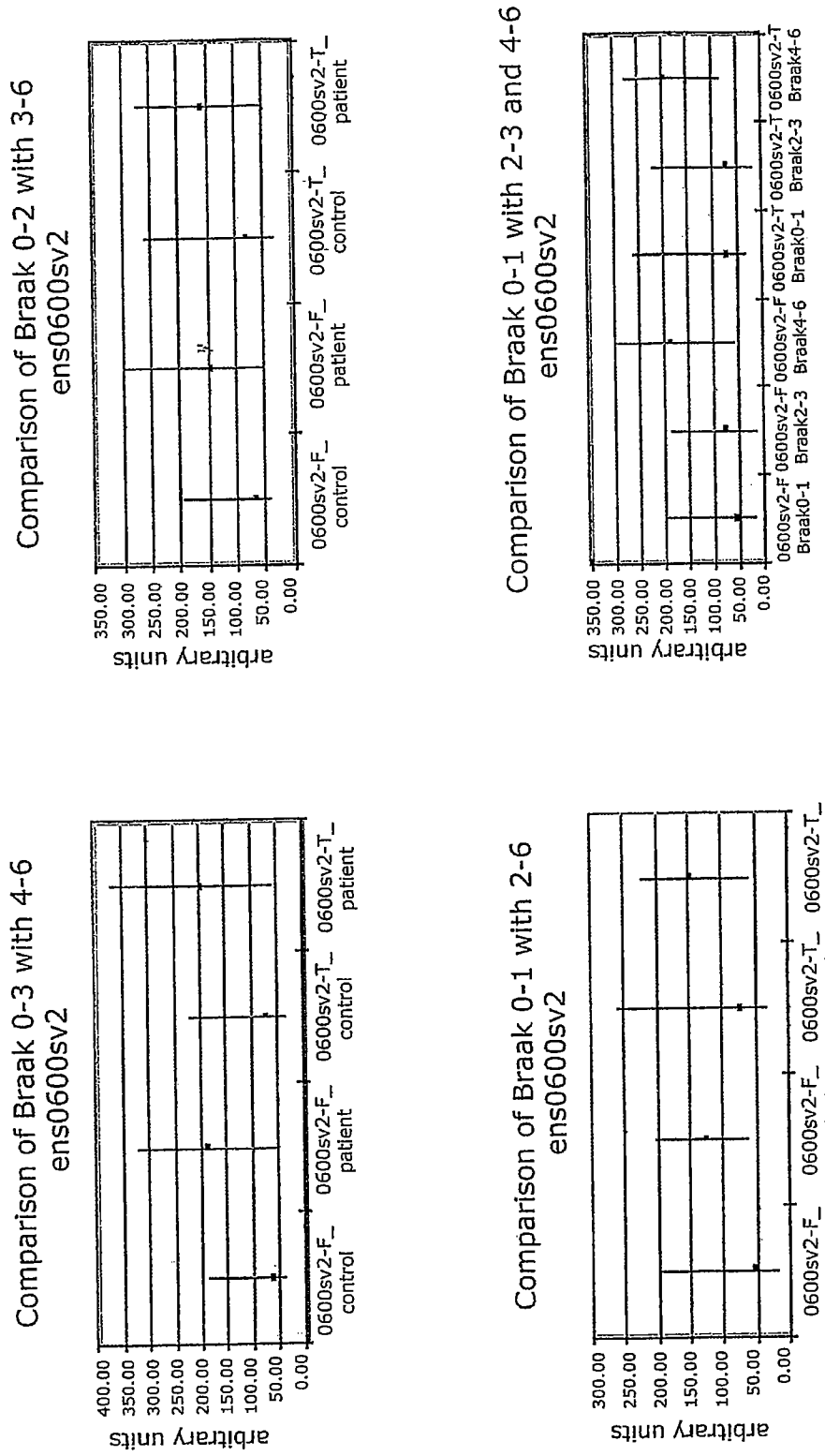


Fig. 32: Analysis of absolute mRNA expression of HIF3alpha splice variant 3

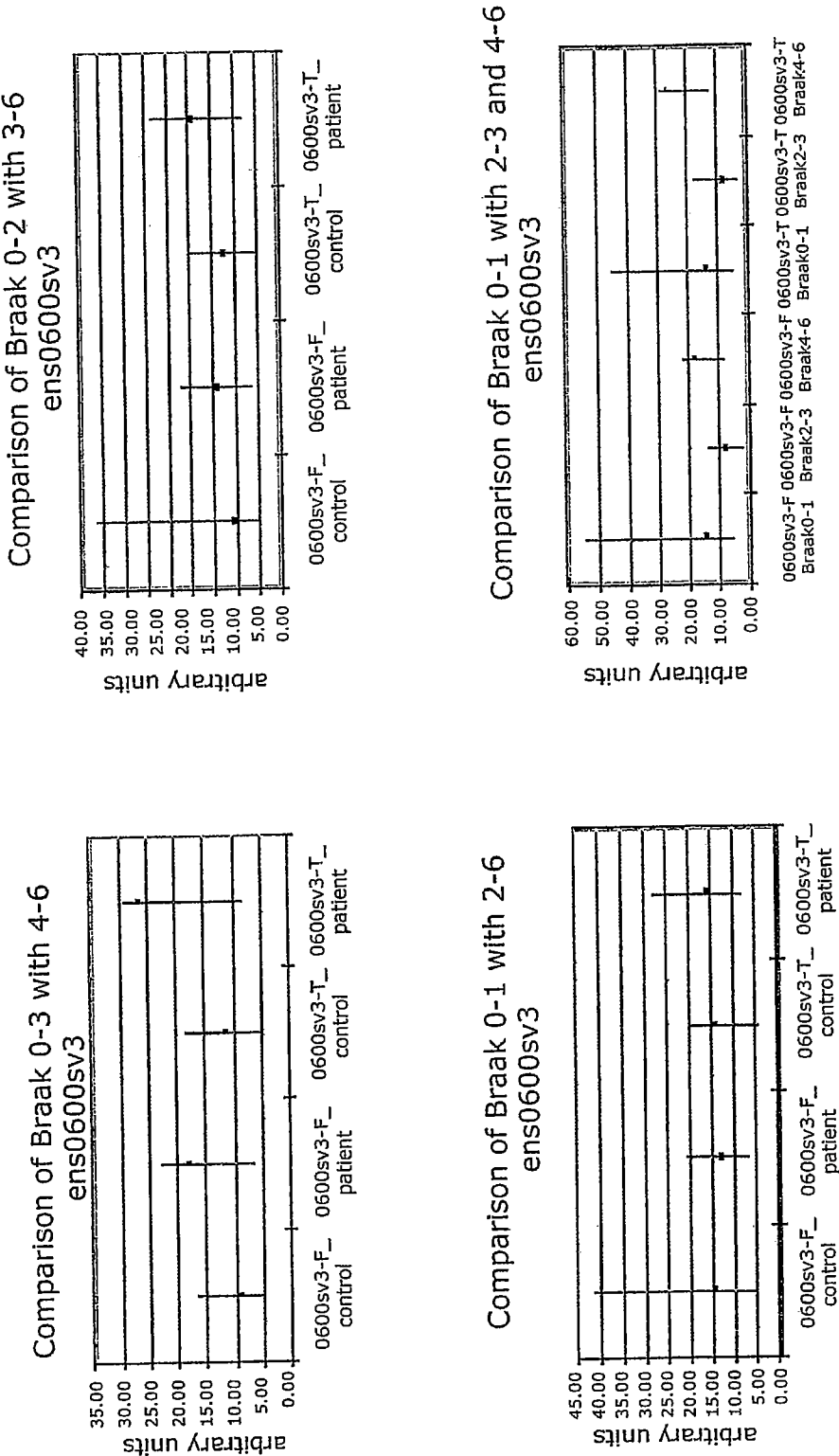


Fig. 33: Analysis of absolute mRNA expression of HIF3alpha splice variant 5

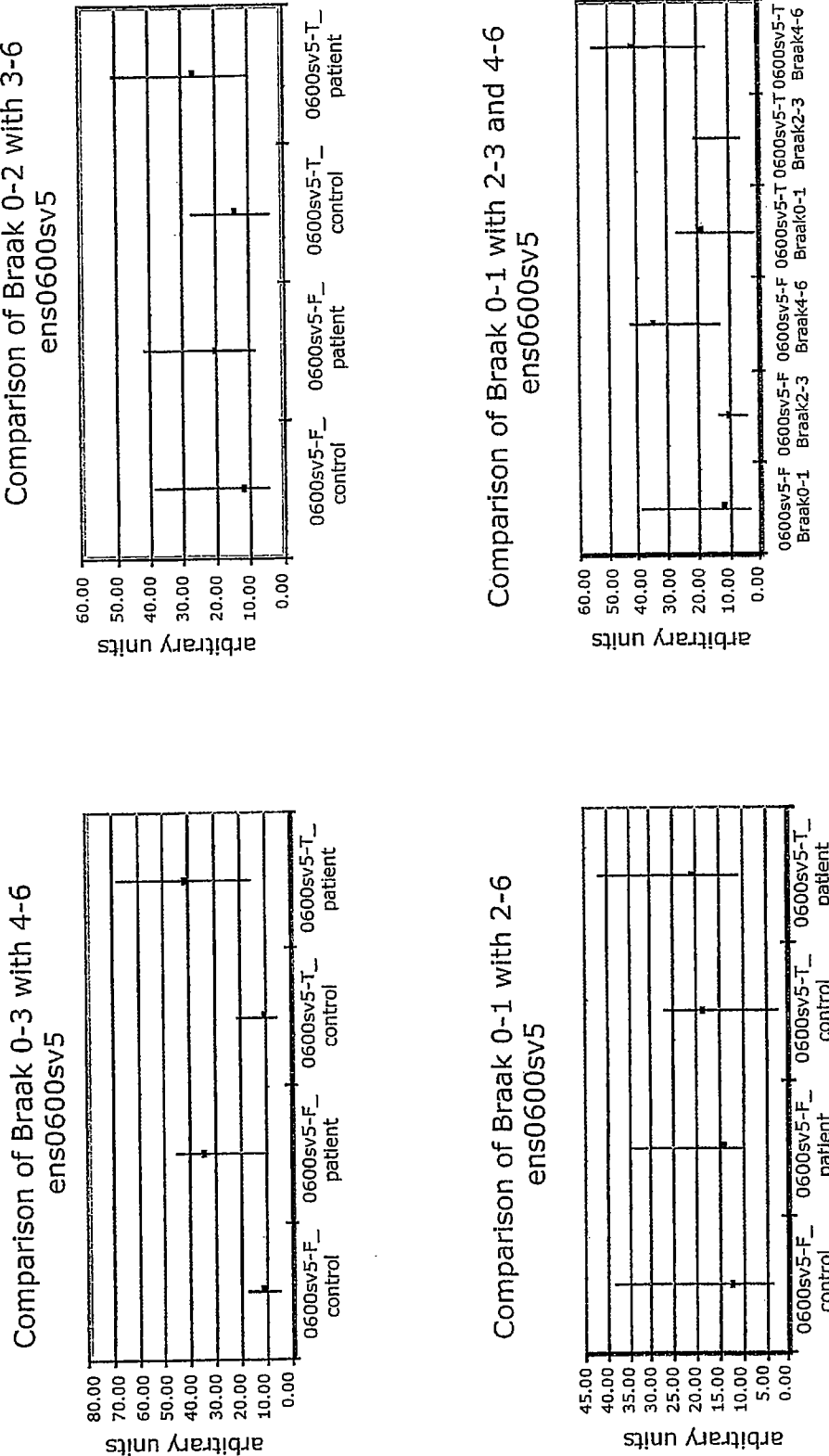
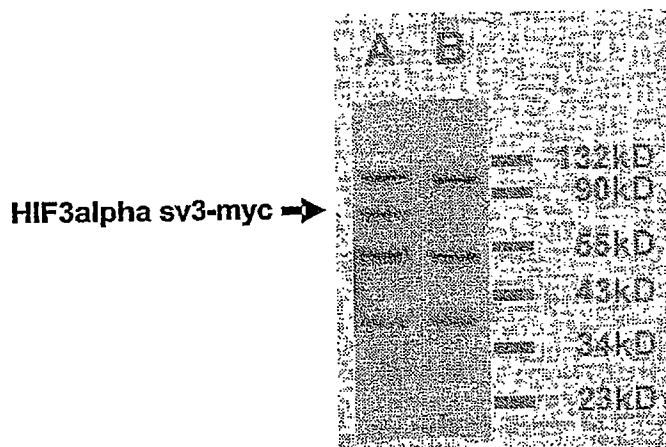


Fig. 34: Western Blot of H4APPsw cell protein extracts labeled with anti-HIF3alpha sv3-myc antibodies



**Fig. 35: Immunofluorescence analysis of
HIF3alpha sv3 protein in neuroglioma cells**

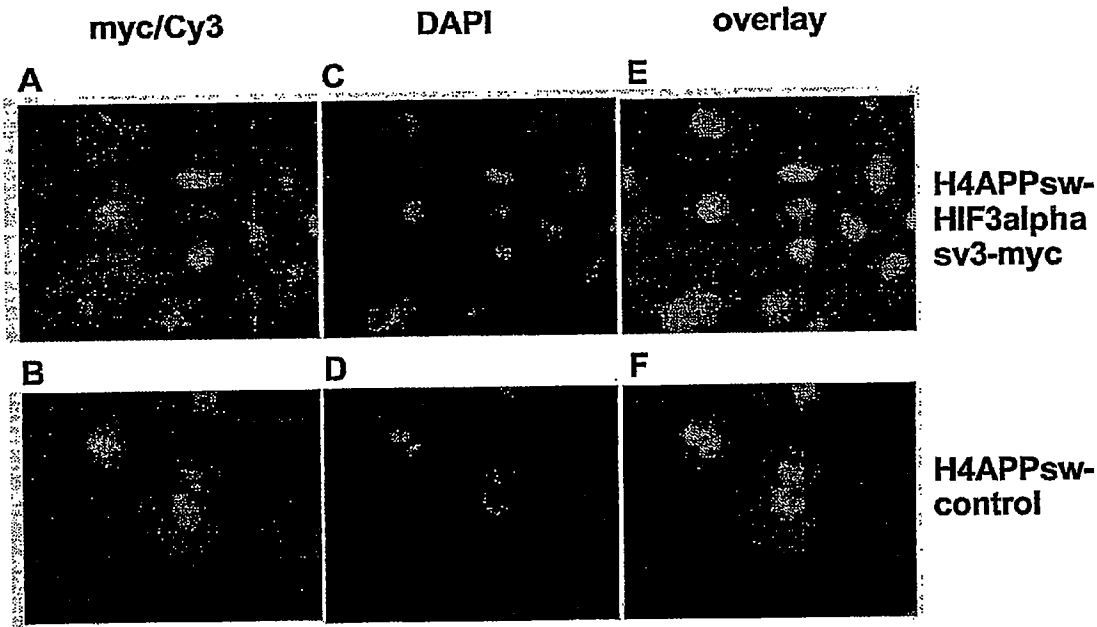


Fig. 36: Images of human brain sections labeled with anti-HIF3a antiserum, cell specific markers and DAPI

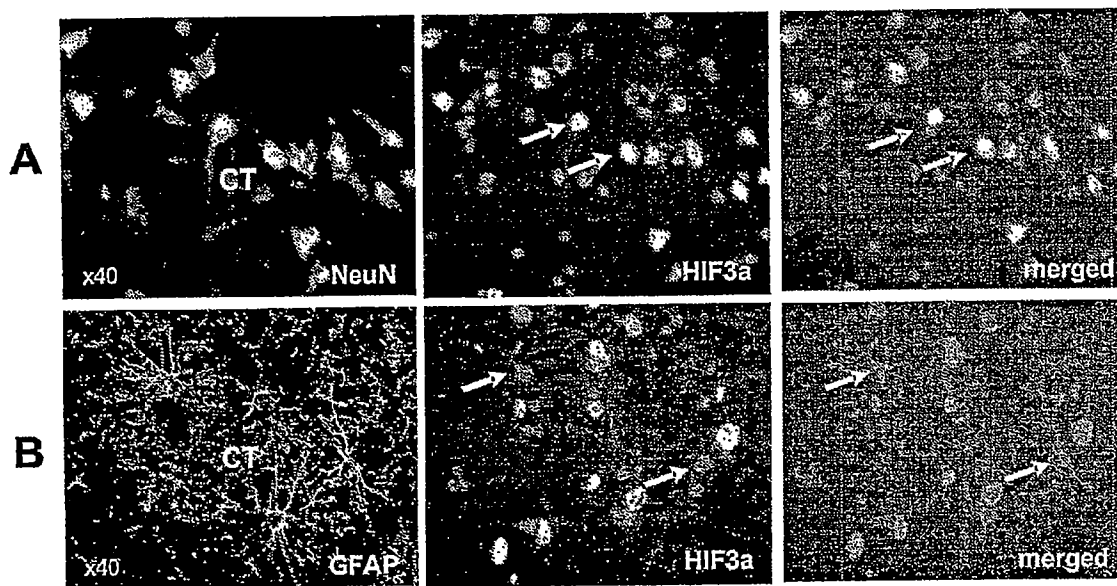
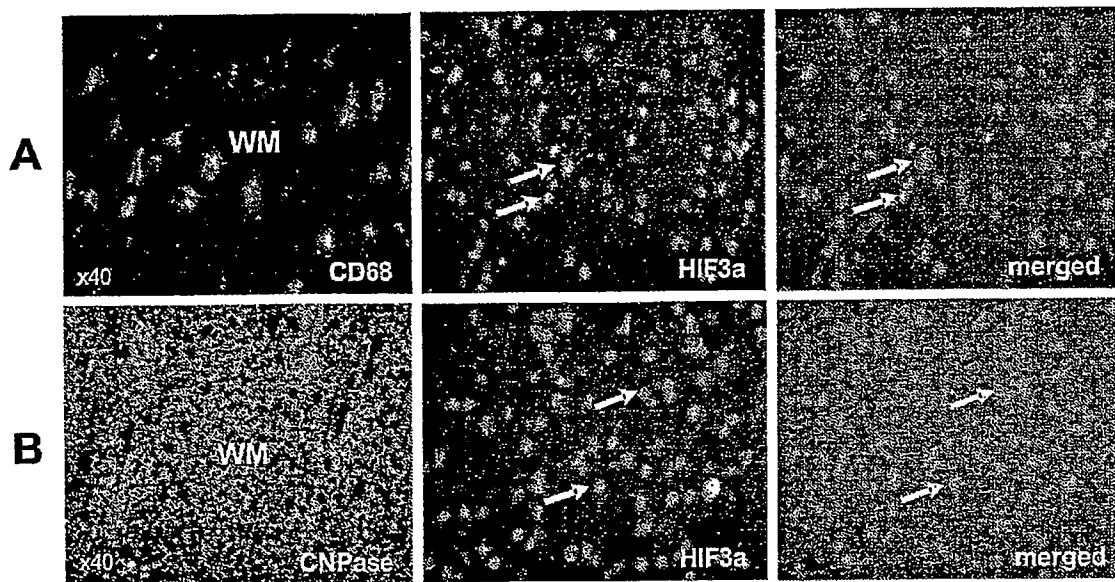


Fig. 37: Images of human brain sections labeled with anti-HIF3a antiserum, cell specific markers and DAPI



**Fig. 38 : Images of human brain sections labeled
with anti-HIF3a antiserum, GFAP and DAPI**

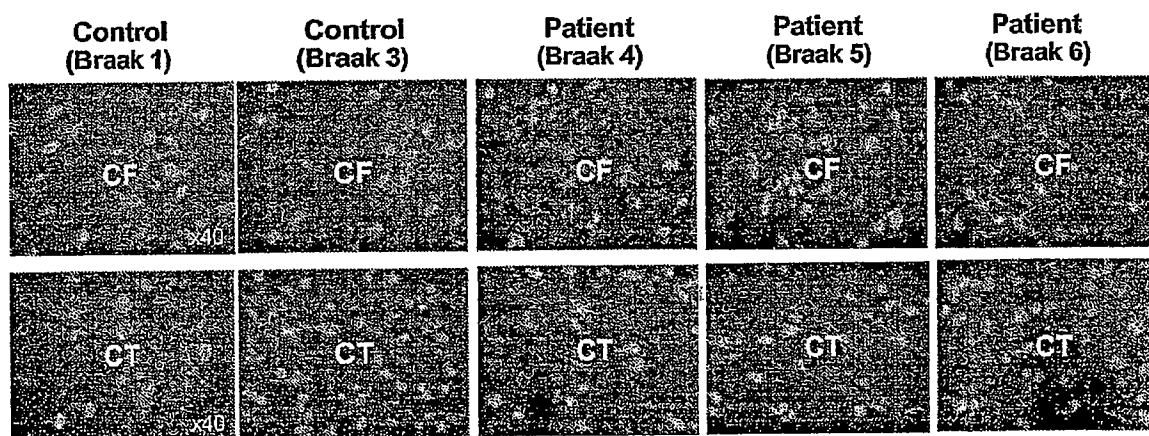


Fig. 39: Expression level of HIF3a sv3 expressing transgenic flies

name	cycle number	mean	stdev	error %	factor [normalization to rp49 cycle number]	mean*factor	difference	expression normalized to housekeeping gene and efficiency of HIF3a-sv3 primer	summary
HIF3a-sv3#3	30.03	30.237	0.2156	0.71265776	1	30.2366667			HIF3a-sv3#3 is 2.8 times higher expressed than HIF3a-sv3#4
HIF3a-sv3#3	30.22								
HIF3a-sv3#3	30.46								
HIF3a-sv3#4	30.96	31.160	0.1778	0.57048745	1.010625536	31.4910917	-1.25442502	-2.847544799	
HIF3a-sv3#4	31.22								
HIF3a-sv3#4	31.30								
HIF3a-sv3#57	27.84	27.953	0.1060	0.37915843	1.043347488	29.1650401	1.07162656	2.432592298	HIF3a-sv3#57 is 2.4 times higher expressed than HIF3a-sv3#3 and 5.3 times higher than HIF3a-sv3#4
HIF3a-sv3#57	27.97								
HIF3a-sv3#57	28.05						-2.32605158	-5.280137098	

$E = 10^{-(1/n \cdot \text{slope})}$ slope = -2.806 $E = 2.27$ HIF3a-sv3 primer pair

name	rp49 cycle #	mean	stdev	error %	factor
HIF3a-sv3#3	19.63	19.657	0.0929	0.47269323	1
HIF3a-sv3#3	19.76				
HIF3a-sv3#3	19.58				
HIF3a-sv3#4	19.59	19.450	0.1929	0.99163504	1.010625536
HIF3a-sv3#4	19.23				
HIF3a-sv3#4	19.63				
HIF3a-sv3#57	18.97	18.840	0.1300	0.69002123	1.043347488
HIF3a-sv3#57	18.71				
HIF3a-sv3#57	18.84				

Fig. 40: Nuclear localization of HIF3a sv3 in transgenic *Drosophila*

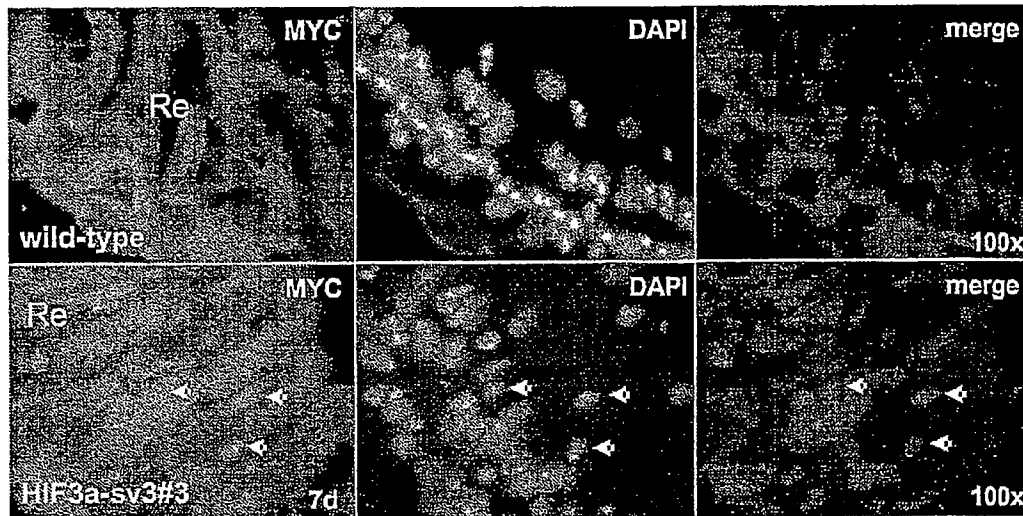


Fig. 41: HIF3a sv3 protein expression in transgenic flies

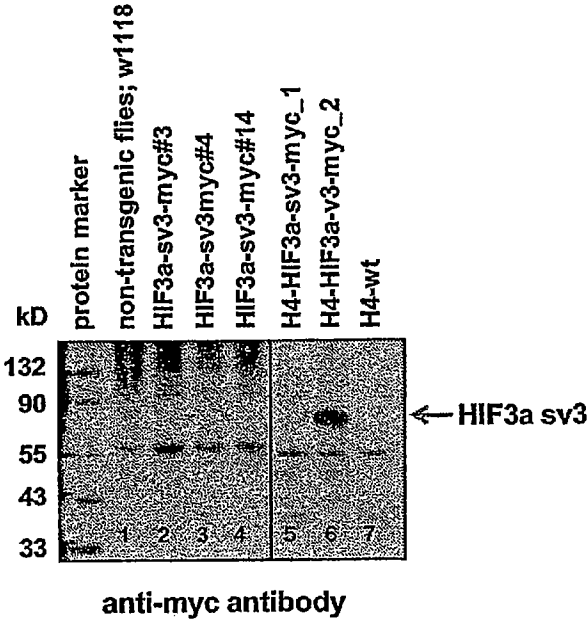
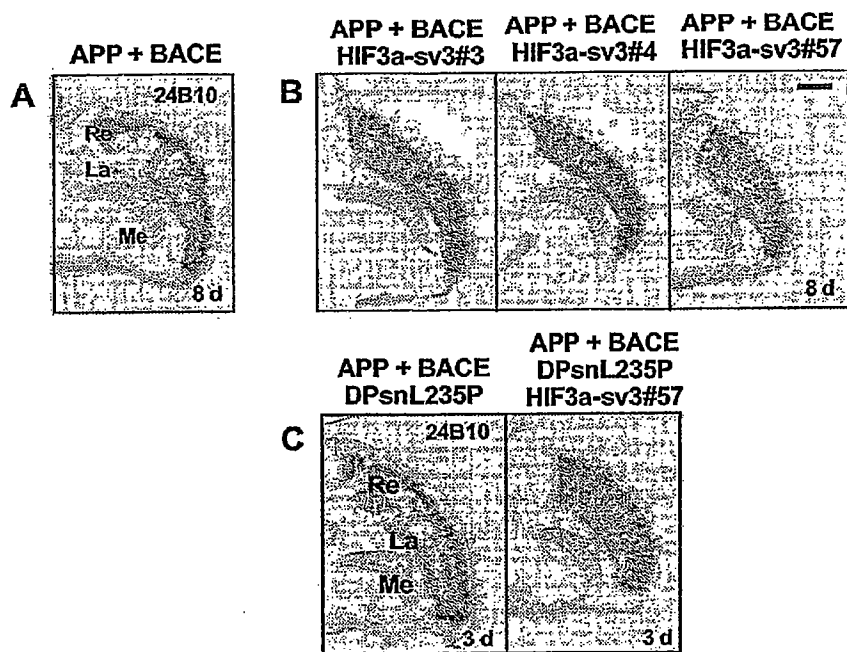
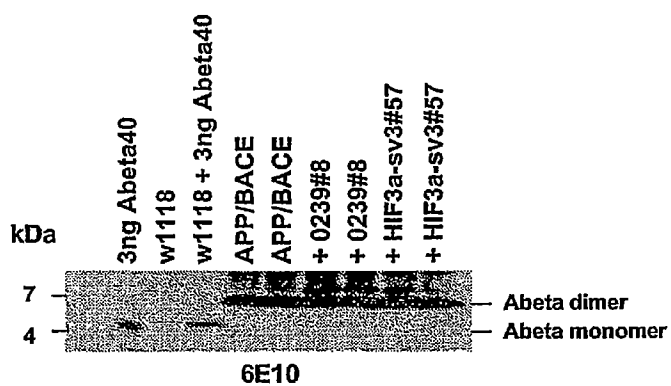


Fig. 42: HIF3a sv3 expression rescues photoreceptor cell degeneration



**Fig. 43: Abeta level in hAPP/hBACE/HIF3a sv3
protein expressing flies**



**Fig. 44: Abeta plaque deposition in
hAPP/hBACE/HIF3a sv3 expressing flies**

